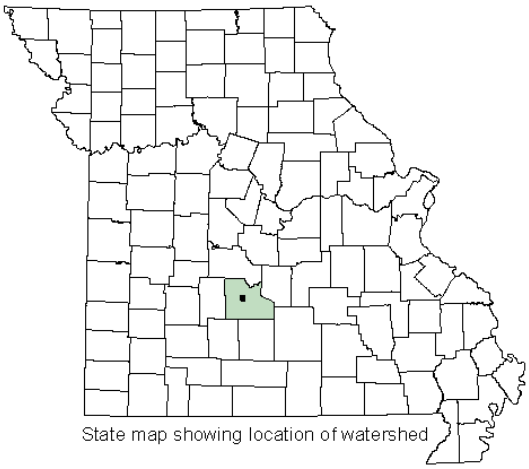
Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Dry Auglaize Creek

Waterbody Segment at a Glance:


State map showing location of watershed

County: Laclede
Nearby Cities: Lebanon
Length of impairment: 3 miles
Pollutant: Biochemical Oxygen Demand (BOD), Volatile Suspended Solids (VSS)
Source: Lebanon Wastewater Treatment Plant (WWTP)

Propose to change the pollutant from NFR to VSS and the length of impairment from 1.5 to 3 miles on the 2002 303(d) list

TMDL Priority Ranking: Low

Description of the Problem

Beneficial uses of Dry Auglaize Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life and Human Health associated with Fish Consumption

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

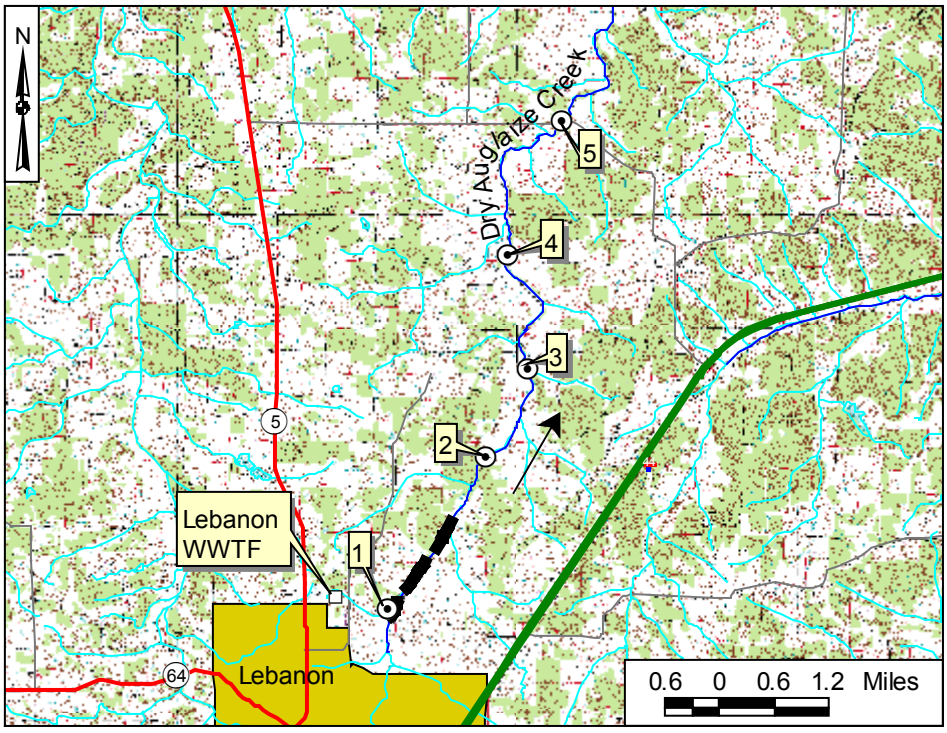
- The Missouri Water Quality Standard (WQS), found in 10 CSR 20-7.031 Table A, for dissolved oxygen (related to BOD) in streams is 5.0 mg/L (milligrams per liter or parts per million).
- The standards for volatile suspended solids (VSS) may be found in the general criteria section of the WQS at 10 CSR 20-7.031(3)(A) and (C). Here it states:
  - Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.
  - Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

Any waterbody that was listed for Non-Filterable Residue (NFR) in 1998 is now being listed as Volatile Suspended Solids (VSS). The listing gives a clearer picture of the specific sources contributing to the impairment. VSS are organic solids coming from wastewater treatment plants.

This stream shows excessive algae growth and reduced diversity of aquatic invertebrates (like water insects and crayfish) downstream from the Lebanon wastewater treatment plant (WWTP). VSS refer to particles that are suspended in water, like the algae in Dry Auglaize Creek, or those that settle out, like sewage sludge. Suspended algae are a problem in addition to being unsightly and smelly. They block sunlight, thus reducing dissolved oxygen in the water. Many aquatic organisms require high levels of oxygen to survive. Additionally, when algae dies off, the water is robbed of dissolved oxygen to decompose it.

Like all wastewater discharges in Missouri, the Lebanon WWTP has to meet the requirements of a discharge permit issued by Missouri Department of Natural Resources. The Lebanon WWTP discharges to a "losing stream" section of Dry Auglaize Creek. A losing stream is one that loses 30 percent or more of its flow to the groundwater system. For this reason, Lebanon was required by the department to build an advanced wastewater treatment plant and provide a high degree of wastewater treatment. The recent aquatic invertebrate study suggests that even advanced waste treatment may not be protective of aquatic life if there is little or no natural streamflow to dilute the wastewater within the stream. To achieve water quality standards, an even more advanced treatment technology may be needed. This presents a problem for many towns across the state. The costs for this level of treatment are high and the smaller community may not have the resources to pay for the upgrades. Graphs summarizing the data and a map with sampling sites may be found below.

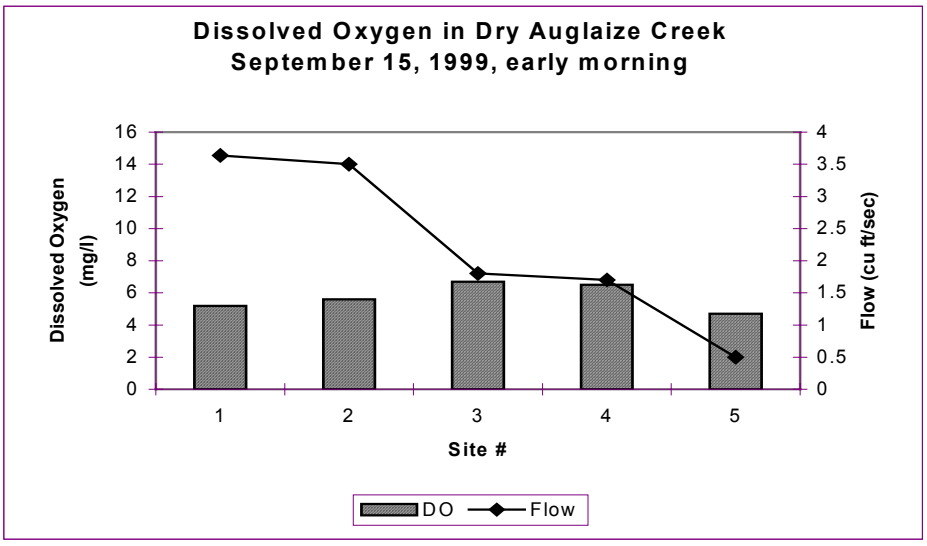
Dry Auglaize Creek in Laclede County, Missouri, with Sampling Sites



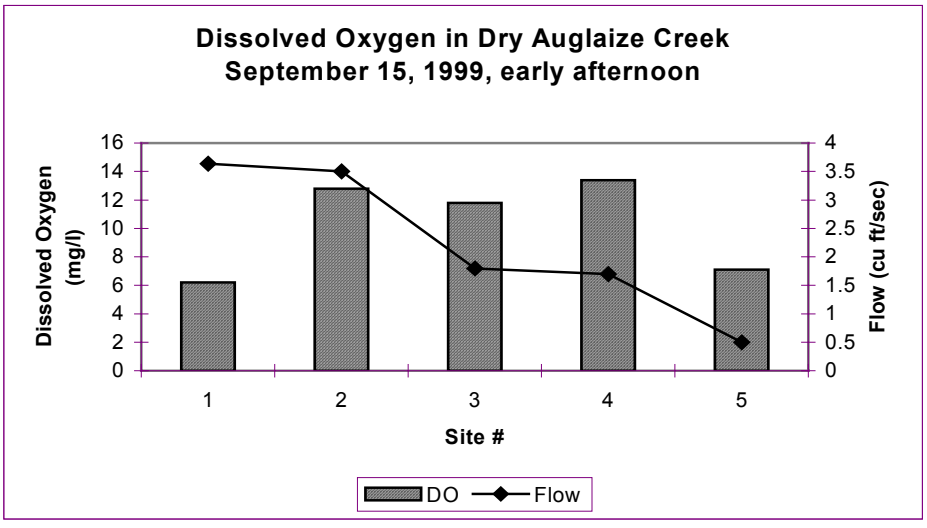
Impaired Segment → Direction of Flow

Site Index

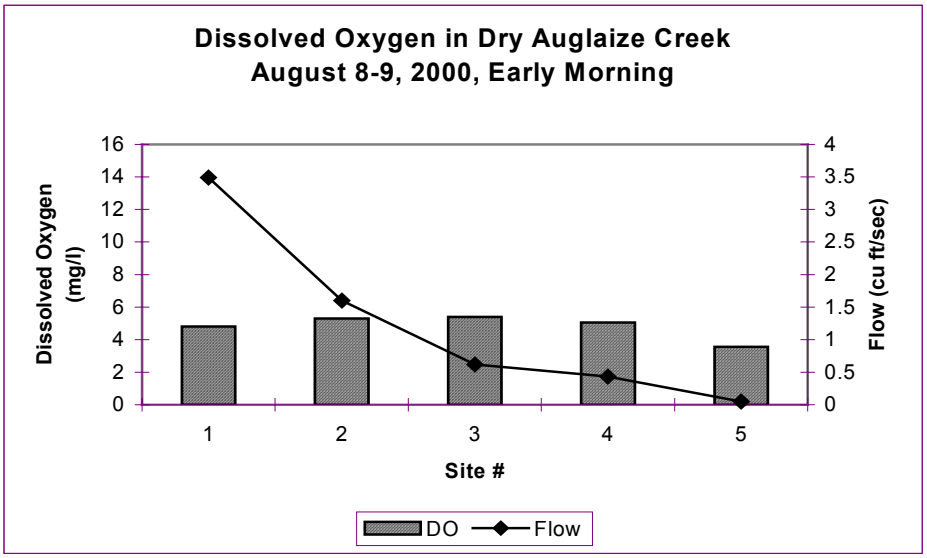
1 – Lebanon WWTP Outfall
2 – Dry Auglaize Creek 2 miles below Lebanon WWTP
3 – Dry Auglaize Creek 3.2 miles below Lebanon WWTP
4 – Dry Auglaize Creek 5 miles below Lebanon WWTP
5 – Dry Auglaize Creek 7 miles below Lebanon WWTP



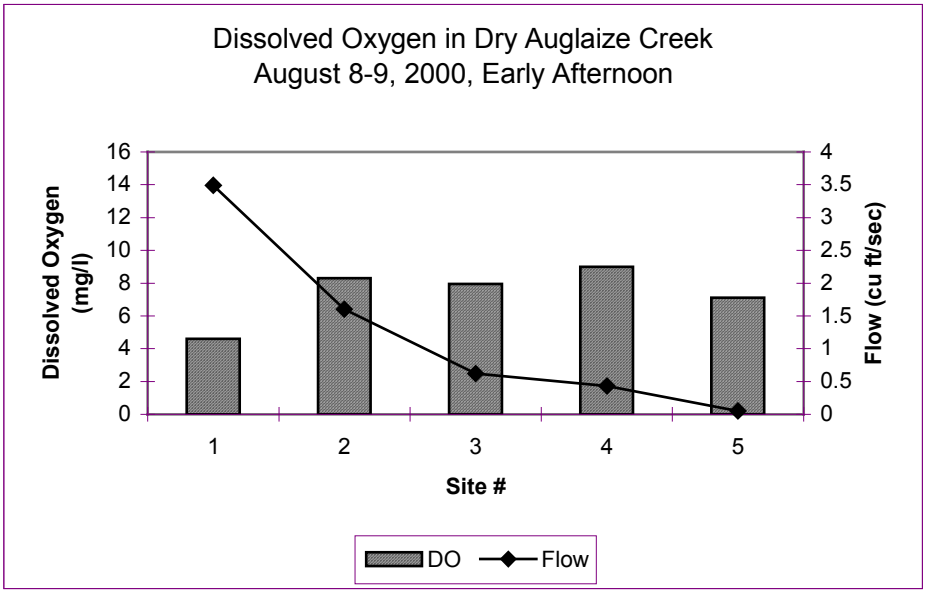
Source: Missouri Department of Natural Resources



Source: Missouri Department of Natural Resources



Source: Missouri Department of Natural Resources



Source: Missouri Department of Natural Resources

For more information call or write:
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